DOCUMENT RESUME

ED 458 311 UD 034 448

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TITLE	An Empirical Study of the School Zone Law in Three Cities in Massachusetts.
INSTITUTION	Join Together, Boston, MA.
PUB DATE	2001-07-02
NOTE	59p.; Funded by the Shaw and Harpel Foundations.
AVAILABLE FROM	For full text: http://www.jointogether.org.
PUB TYPE	Reports - Research (143)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Drug Legislation; Elementary Secondary Education; Law Enforcement; Poverty; *School Safety; Urban Areas; Urban Schools
IDENTIFIERS	*Drug Free School Zones; *Drug Trafficking; Massachusetts

ABSTRACT

This study of the 1989 Massachusetts' School Anti-Drug law reviewed 443 drug dealing cases in three cities. After selecting cities and drug dealing cases, researchers reviewed District Attorney case files and extracted selected data items (primarily from police reports). They mapped incident locations, schools, and parks in the cities; computed distances from drug dealing incident locations to schools and parks; analyzed time/date and geographic factors influencing case outcomes; and analyzed the geography of drug dealing with reference to the school zone law. Although few drug dealing cases involved sales to minors, most occurred within school zones (due to the density of schools in high poverty/high drug dealing areas). In most school zone cases, defendants pleaded to lesser charges and received lesser sentences. The study concludes that the school zone statute does not make areas around schools particularly safe for children, cannot reasonably be expected to do so, and is not used by prosecutors in a way calculated to move drug dealing away from schools. Instead, the law operates generally to raise the penalty level for drug dealing and does so in ways that are unpredictable for defendants. Individual school data are appended. (SM)

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An Empirical Study of the School Zone Law in Three Cities in Massachusetts

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Final Release Version: July 2, 2001

UD034448

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Executive Summary

This study reviewed the role of the school zone law in 443 drug dealing cases in three cities: Fall River, New Bedford and Springfield.

The study shows that:

(a) School zones -- the areas within 1000 feet of schools – cover 29% of the areas of the study cities, 56% of the high poverty areas within the cities. (See Table 14.)

(b) Although less than 1% of the drug-dealing cases involved sales to minors, most of the cases, approximately 80%, occurred within school zones, apparently because of the density of schools in high-poverty/high-drug-dealing areas. (See text at note 3, Table 9 and Table 14.)

(c) Most school zone cases are "broken down" – defendants plead to lesser charges and receive less than the two-year mandatory minimum sentence for dealing in a school zone. (See Table 10.)

(d) Decisions to "break down" charges are not influenced by proximity to schools or time of day. (See Table 10 and Table 11.)

(e) Most drug dealers commit their offenses close to home and most school-zone-charged dealers reside in school zones. (See Table 12.)

(f) Overlapping school zone boundaries are chaotic and confusing in the studied inner city areas. (See Figures and discussion at pages 17-18.)

(g) The school zone statute fails to push drug dealing away from schools – the density of dealing within 250 feet of schools is similar to the density of dealing at greater distances. (See Table 13.)

Anecdotal discussions indicate that these factual findings in three cities are probably consistent with the patterns in other cities.

It appears from the study findings that the school zone statute (a) does not make the areas around schools particularly safe for children; (b) cannot reasonably be expected to do so; and (c) perhaps as a result, is not used by prosecutors in a way calculated to move dealing away from schools. Instead the law operates generally to raise the penalty level for drug dealing and does so in ways that are unpredictable for defendants.

Acknowledgements

This study was made possible initially by the developmental support of the Harpel Foundation. The Shaw Foundation provided the principal funding for the project effort. Join Together generously supported this project by creating a home for it and by allowing Susan Aromaa to devote herself to it during the study period, July to January 2000. As it became clear that the field mapping efforts required would exceed our project resources, my parents, Susan and Carl Brownsberger, joined the team on a volunteer basis to help finish the tasks of mapping and data collation. A number of people helped us identify good technical tools for this study, including Charles Counselman, emeritus professor at the Massachusetts Institute of Technology, Leonard McWilliams of Informix Software and staff members of the planning departments in all the participant cities.

Ultimately, our greatest thanks must go to the two District Attorneys who cooperated with the project: William M. Bennett of Hampden County and Paul F. Walsh, Jr. of Bristol County. They selflessly contributed to the understanding of an important subject. I hope we have lived up to their trust.

Will Brownsberger

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Introduction

At the height of national concern about crack, around 1989, Massachusetts and many other states[1] created an enhanced penalty for drug dealing in proximity to areas where kids play. In Massachusetts, the legislature provided for a minimum mandatory two-year incarceration for dealing within 1000 feet of a primary, secondary or vocational school.[2] The two years are additional to any other punishment imposed. The Massachusetts Supreme Judicial Court has generally upheld the school zone law, stating in Commonwealth v. Taylor, 413 Mass. 243, 250, 596 N.E.2d 333 (1992), that the law "furthers a legitimate State interest of protecting children and adolescents by establishing a drug free school zone."

While no one questions the goals of school zone legislation, it is time to ask how the legislation has functioned in practice. The present study is focused essentially on two questions: (1) Are charging and sentencing in school zone cases shaped by the legislative goal of keeping drug dealing away from schools? (2) Is the law successful in moving drug dealing away from schools?

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[1] See Bateman, T., "Validity, Construction and Application of State Statutes Prohibiting Sale or Possession of Controlled Substances within Specified Distance of Schools," 27 ALR 5th 593 (1995).

[2] In 1993, the legislature expanded the law to also cover dealing within 100 feet of a park. In 1998, after a court decision determining that pre-schools were not elementary schools subject to the law as worded, the legislature added 1000 foot protection for accredited pre-school and head-start programs. As it has read since July 1, 1998, M.G.L. c. 94C s. 32J provides that:

> Any person who violates the provisions of section thirty-two [class A (primarily opiates) sales], thirty-two A [class B (primarily cocaine) sales], thirty-two B [class C (primarily prescription drug) sales], thirty-two C [class D (primarily marijuana) sales], thirty-two D [class E (other) sales], thirty-two E [trafficking], thirty-two F [sales to minors] or thirty-two I [paraphernalia sales] while in or on, or within one thousand feet of the real property comprising a public or private accredited pre-school, accredited headstart facility, elementary, vocational, or secondary school whether or not in session, or within one hundred feet of a public park or playground shall be punished by a term of imprisonment in the state prison for not less than two and one-half nor more than fifteen years or by imprisonment in a jail or house of correction for not less than two nor more than two and one-half years. No sentence imposed under the provisions of this section shall be for less than a mandatory minimum term of imprisonment of two years. A fine of not less than one thousand nor more than ten thousand dollars may be imposed but not in lieu of the mandatory minimum two year term of imprisonment as established herein. In accordance with the provisions of section eight A of chapter two hundred and seventy-nine such sentence shall begin from and after the expiration of the sentence for violation of section thirty-two, thirty-two A, thirty-two B, thirty-two C, thirty-two D, thirty-two E, thirty-two F or thirty-two I. Lack of knowledge of school boundaries shall not be a defense to any person who violates the provisions of this section.

There are two kinds of larger questions that we do not address in this study: (1) questions about the effectiveness of mandatory sentencing or "the drug wars" more generally; (2) questions about decision-making by police and prosecutors as related to race or other considerations. Our methods speak only to the particular operation of the school zone law.

Methodology and Sample Validity

The basic steps of our study were: (1) to select counties (Bristol and Hampden) and cities within them for study (Fall River, New Bedford and Springfield) ; (2) to select a sample of drug dealing cases for study in the selected cities; (3) to review District Attorney case files for the selected cases and extract selected data items (primarily from the police reports); (4) to map incident locations, schools and parks in the cities; (5) to compute distances from drug-dealing incident locations to schools and parks; (6) to analyze time/date and geographic factors influencing case outcomes; (7) to analyze the geography of drug dealing with reference to the school zone law.

Sample Selection

Counties for Study

We conducted our study in two Massachusetts counties: Bristol and Hampden. This was a "convenience sample": although we approached all of the District Attorneys in the 8 large counties (the first 8 listed in Table 1), only those from Hampden and Bristol counties were willing to participate.

The two participating counties, especially Hampden, have above-average poverty rates (1989 data) and above-average rates of drug charges per 1000 residents. They both contain substantial areas of concentrated poverty. In Massachusetts, areas of concentrated poverty have drug dealing incarceration rates over 50 times higher than affluent areas.[3]

Hampden county had a relatively high rate of drug charges leading to school zone convictions (last column in Table 1), while Bristol's rate is relatively low. District Court drug charges in Table 1 include possession charges, which cannot lead to school zone convictions, and the rates shown here cannot be used to compare counties. (Available summary data on District Court activity does not differentiate possession from drug dealing charges. Nationwide, approximately 1 in 4 arrests for a drug offenses is for a dealing offense.[4])

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[3] See Brownsberger W., Profile of Anti-Drug Law Enforcement in Poverty Areas in Massachusetts, report (110 pages) published in 1997 through the Robert Wood Johnson Foundation, now available online at http://www.hms.harvard.edu/doa/ (select "Faculty and Staff" and then Brownsberger). See, in particular, Chart 6 at page 9. The data in Profile is state prison data, reflecting primarily the more serious drug dealing offenses. "High" or "concentrated" poverty areas are areas consisting of census tracts in each of which more than 20% of the population lives in households with income below the poverty line.

[4] Communication from Federal Bureau of Investigation, Criminal Justice Information Services Division, response to author's request, number 980589, August 25 1998.

Table 1: Counties in Massachusetts (Sample Counties Highlighted)[5]

Counties: (8 Larger counties listed first)	Population (1998)	Poverty Rate (1990)	% of Pop. in High Poverty Areas (1990)[6]	District Court Drug Charges (FY1998)	District Court Drug Charges per 1000 Pop.	School Zone Convictions (FY1998)	School Zone Convictions per 1000 Drug Charges
Bristol	528,904	9.1%	8.8%	5,204	10	14	2.7
Essex	715,669	9.3%	13.1%	6,221	9	23	3.7
Hampden	454,635	13.0%	18.3%	6,760	15	108	16.0
Middlesex	1,464,685	6.2%	2.5%	6,027	4	42	7.0
Norfolk	657,683	4.5%	0.0%	2,477	4	6	2.4
Plymouth	470,158	6.6%	5.2%	3,074	7	26	8.4
Suffolk	649,733	18.1%	42.7%	11,559	18	75	6.5
Worcester	752,569	8.3%	7.8%	6,191	8	13	2.1
Barnstable	205,920	7.5%	0.0%	1,095	5	0	0.0
Berkshire	138,938	8.7%	0.0%	622	4	9	14.2
Dukes	14,272	6.7%	0.0%	122	9	0	0.0
Franklin	71,615	9.6%	0.0%	330	5	0	0.0
Hampshire	158,777	10.7%	0.0%	723	5	0	0.0
Nantucket	7,705	5.7%	0.0%	30	4	0	0.0
TOTAL/AVG	6,291,263	8.9%	10.2%	50,435	8.0	316	6.3

Cities to be Studied in Those Counties

We selected the largest cities in each county: in Bristol County, both Fall River and New Bedford; in Hampen County, Springfield. In each county, the selected cities included just over 1/3 of the total population, most of the population in concentrated poverty areas and roughly 2/3 of the drug charges – see Table 2.

Table 2: Population and Poverty for Cities in Bristol and Hampden Counties (Selected Cities Highlighted)[7]

City:	Population in High Poverty Areas (1990)	City High Poverty Areas as % of County	Total Population (1990)	City Total Population as % of County	District Court Drug Charges (FY1998)	District Court Drug Charges as % of 8 County[8]
Fall River	19,667	44%	92,703	18%	1,205	23%
New Bedford	24,848	56%	99,922	20%	2,589	50%
Rest of Bristol County	0	0%	313,700	62%	1,410	27%
Total Bristol County	44,515	100%	506,325	100%	5,204	100%
Holyoke	17,950	21%	43,704	10%	1,630	24%
Springfield	65,692	79%	156,983	34%	4,220	62%
Rest of Hampden County	0	0%	255,623	56%	910	13%
Total Hampden County	83,642	100%	456,310	100%	6,760	100%

[5] Data Sources for Table 1 are: 1998 population counts are from The Massachusetts Institute for Social and Economic Research, Population Estimates of Massachusetts Cities, Towns and Counties, Census Counts and Current Estimates, 1930 to 1998, http://www.umass.edu/datacenter/population/Pop3098.xls (prepared September 2000 and accessed January 2, 2001); poverty rates are computed from the 1990 census, specifically Summary Tape File 3A on CD-Rom prepared by the Bureau of the Census, Data User Services Division as reissued in November 1995; for drug charge counts, Supreme Judicial Court, Annual Report of the State of the Massachusetts Court System, Fiscal Year 1998, pages 88-89; for school conviction counts, Massachusetts Sentencing Commission, written communication to Will Brownsberger on October 13, 1999. District Court charges in Suffolk County as shown here include the Boston Municipal Court.

[6] See note 3.

[7] Data sources for Table 2 are same as for Table 1.

[8] Note that these drug charge counts and percentages are based on all drug charges filed in the District Courts – both possession and dealing charges and also charges from surrounding communities in the venues of the District Court. Our samples of FY99 drug dealing incidents (limited to those with fully reviewed police reports including identification of incident cities) in Fall River, New Bedford, and Springfield Courts showed that incidents in the cities themselves accounted for the following shares of the drug-dealing case-flows respectively: 87.5% (111 of 129), 92.6% (189 of 204), 97.4% (188 of 193). The four cities listed in Table 2 contain respectively 68%, 61%, 100% and 65% of the population within their District Courts' venues (1990). They each contain 100% of the concentrated poverty in their District Courts' venues.

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Case Data in Each City

We sought to sample cases according to the following rules:

Cases should involve charges that would create legal exposure to a school zone penalty if they occurred in a school zone – essentially drug-dealing charges.[3] *Cases are included whether or not school zone violation is actually charged.*

Cases should have been entered in the courts in Fiscal 1999 – July 1, 1998 through June 30, 1999. This time selection was based on three objectives: (1) to obtain a full year to avoid any seasonality effect; (2) to use a year old enough that most cases would have been disposed of; (3) to use a year recent enough that case files would not have been transferred to archival facilities.

Cases should not include trafficking charges, charges of dealing under Chapter 94C, Section 32E -- generally higher weight dealing carrying mandatory penalties. We expected that these mandatory penalties, frequently higher than the school zone mandatory penalties, would be the dominant factors in negotiating settlements in trafficking cases.

Cases should involve adult defendants. Juvenile cases do not generally lead to incarceration, and the school zone charge is less relevant.

Cases should originate in the District Court as opposed to Superior Court. Cases originating in Superior Court generally involve strategic activities directed against high priority dealer targets by the police and prosecutors. We did not exclude cases that originated in District Court and were subsequently indicted to Superior Court.

Within these criteria, our case sampling process differed in the two participating counties. In Bristol County, the District Attorney provided us in electronic form a full county-wide list of all cases eligible under the rules of preceding paragraphs. He allowed us to work on the premises of his Fall River and New Bedford Offices and retrieve and review all the case files on the list.

Table 3: Collection of *Drug-Dealing* Case Data for Fiscal 1999 in Bristol County (New Bedford and Fall River District Courts)

	New Bedford District Court	Fall River District Court
List of all District Court adult drug-dealing cases in FY 1999	257	159
Files completely located	231	146
After cases with trafficking charges excluded	204	129
After cases with incidents in other cities excluded	189	111
After cases with incidents not found on maps excluded	180	103

In Hampden County, our method was different. The District Attorney provided us with (1) a list of all (399) Springfield District Court cases entered in Fiscal 1999 *that included school zone charges* (but not drug-dealing cases where school zone offenses were not charged) and (2) a sample of redacted files for 158 District and 106 Superior Court school zone cases. We compared the sample files to the District Court list and excluded some Superior Court files which did not arise from cases entered originally in District Court.

[3] The specific cases that we intended to include in our samples were all cases that included among their charges violations of any of the following sections of Chapter 94A: section thirty-two (class A, primarily opiates sales), thirty-two A (class B, primarily cocaine, sales), thirty-two B (class C, primarily prescription drug, sales), thirty-two C (class D, primarily marijuana, sales), thirty-two D (class E, other, sales), thirty-two F (sales to minors) or thirty-two I (paraphernalia sales)

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Table 4:Collection of *School Zone* Case Data for Fiscal 1999 in Springfield District Court

Total School Zone Case Files	Hampden County Superior Court	Springfield District Court
Selected files received of adult school zone cases	106	158
Files complete with school zone charges entered in FY99	100	141
After cases with trafficking charges excluded	76	136
After cases with incidents in other cities excluded	57	130
After cases not corresponding to cases on District Court List excluded	30	n.a.[10]
After cases with incidents not found on maps excluded (no losses)	30	130
Cases analyzed as District Court cases	160	

We were concerned that our Springfield sample might be materially biased by either time of year or by disposition of case. Although there is some month-to-month fluctuation in case flow as one might expect, Table 5 shows that the seasonal distribution of sample cases is similar to the distribution of all cases.

Table 5: Distribution by Quarter of Springfield District Court Sample of School Zone Cases Compared to All Fiscal 1999 Springfield District Court School Zone Cases

Quarter	%of District Court Cases not Indicted	% of District Court Cases Indicted	% of Total Cases included Study Sample	% of All District Court Cases
98:III	27%	20%	26%	25%
98:IV	21%	20%	21%	21%
99:I	19%	43%	24%	24%
99:II	33%	17%	30%	31%
FY99	100%	100%	100%	100%
N	130	30	160	399

As to dispositions, the sample is similar to the universe of all drug dealing cases, but (a) it excludes defaults and cases still open and (b) it under-includes cases that have been indicted to superior court. See Table 6 below. We can see no likely systematic effect of these differences on the conclusions of the study.

Table 6: Distribution by Disposition of Springfield District Court Sample of School Zone Cases Compared to All Fiscal 1999 Springfield District Court School Zone Cases

District Court Disposition	Cases included Study Sample	% of Cases included Study Sample	All District Court Cases	% of All District Court Cases	% of Closed District Court Cases
No convictions (of any charge)[11]	40	25%	81	20%	23%
Conviction (for some charge) but no incarceration	38	24%	62	16%	18%
Conviction (for some charge) with incarceration	51	32%	88	22%	25%
Indicted (and dismissed from District Court)	31	19%	117	29%	34%
Open (trial pending or case on default)	0	0%	51	13%	N/A
N	160	160	399	399	348

Geographic Data and Accuracy Issues

Overview

We collected and compared geographic data from diverse sources. Our goal was to derive the best possible position estimates for drug-dealing incidents and school zone boundaries (short of interviewing arresting

[10] We included two eligible cases for which we had District Court files but which we could not locate on the District Court school zone case list.

[11] This category includes continuances without a finding, dismissals, not-guilty findings, nolle prosequis and several less common non-convictions.

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officers and retaining surveyors). In general, we believe that the mapping and measurement process did not introduce error sufficient to influence our conclusions.

The matrix below details which sources were used and for what purposes. Each source is described in more detail below. Further below, an overall discussion of estimation accuracy issues follows.

Table 7: Summary Application of Major Data Sources to Park/School/Case Mapping

Mapping Target	Public Address Lists	Aerial Photography	Geographic Positioning by Visit	Planning Department Geographic Information Systems	Commercial Geographic Data
Fall River Schools	Y	Used to touch up GPS results	Core data source to locate boundaries	N/A	N/A
Fall River Parks	Y	Used to derive boundaries based on address and surrounding streets in public list	N/A	N/A	Used to locate parks in photos with reference to surrounding streets
Fall River Cases	N/A	N/A	Primary Source		Selected additional cross-street cases
New Bedford Schools	Y	Used to confirm decisions about parcel inclusions	Used to locate and verify parcels to include	Primary source for parcel boundaries	N/A
New Bedford Parks	Y	Used to confirm decisions about parcel inclusions	N/A	Primary source for parcel boundaries	N/A
New Bedford Cases	N/A	N/A	Primary source	Add locations for 2 cases	N/A
Springfield Schools	Y	Used to confirm decisions about parcel inclusion	Used to locate and verify parcels to include in high frequency locations	Primary source for parcel boundaries	N/A
Springfield Parks	Y	Used to confirm decisions about parcel inclusion	N/A	Primary source for parcel boundaries	N/A
Springfield non-schools included in police reports (day care centers, etc.)	Y	Used to confirm decisions about parcel inclusion	Used to locate and verify parcels to include in high frequency locations	Primary source for parcel boundaries	N/A
Springfield Cases	N/A	N/A	Primary Source	N/A	N/A

Major Data Sources Used

Inventories of Schools and Parks

We derived basic lists of schools and their addresses for each of the cities from the state Department of Education website. "School and District Profiles," http://profiles.doe.mass.edu (accessed August through October 2000). In Springfield and New Bedford, we supplemented the DOE website with a set of Geographic Information System ("GIS") points for each school, using these point sets, in effect, as address lists. Additionally, in New Bedford and Fall River, we added several schools that appeared on local school zone maps but not on the DOE website. Finally, in every city we reviewed the schools referenced in police reports in school zone cases.

Similarly, in all cities we obtained lists of parks and playgrounds from the Park Departments. In Springfield, we were also able to reference a map of parcel boundaries all park and conservation areas supplied in GIS form. In New Bedford, the Planning Department supplied location points of open space parcels including playgrounds and parks. As with schools, we attempted to identify and include the few parks referenced in police reports.

See Appendices for reconciliation of the alternative school/park sources.

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Aerial Photography

From MassGIS, the Massachusetts Geographic Information System operated by the Massachusetts Executive Office of Environmental Affairs, we obtained aerial photographs covering each of the cities we were studying. We downloaded the photographs from http://www.state.ma.us/mgis/dwn-imgs.htm in MrSID (Multi-resolution Seamless Image Database) format in 0.5 meter resolution (each pixel represents 0.5 meters on the ground at the scale of 1:5000).

These digitized black-and-white photographs were projected by MassGIS using Arc/Info software to register to the North American Datum 1983 (NAD 83) Massachusetts Mainland State Plane meters coordinate system. The photographs each cover an area 4000 meters by 4000 meters. They match well to our other data-sources when the sources are projected in the same coordinate system.

MassGIS believes that 90% of well-defined features lie within 0.5 millimeters of where they should be in the photograph, that is, within 2.5 meters (at the 1:5000 scale) of their position on the ground. They believe further that the maximum displacement of well-defined features on the ground is under 5 meters. MassGIS, "1:5000 Scale Black and White Digital Orthophoto Images - March 2000, Production," http://www.state.ma. usmgis/ogdesc.htm(re-accessed December 26, 2000).

We reprojected our data to the same projection as the photos and overlayed it over the photographs. We used the photographs as our gold standard for resolving inconsistencies in the location of features.

Geographic Positioning System (GPS).

We used a Garmin GPS III Plus hand-held GPS device to estimate the latitudes and longitudes of over 900 locations – drug dealing incidents and school boundary corners – that we visited for the study.

The Garmin GPS III Plus is a 12 parallel channel receiver that receives satellite input and estimates ground latitude and longitude. The device continuously reports the number of satellites that it is in contact with and their signal strengths. Time spent stationary in a single location and the orientation of the device affect received signal strengths. We worked to achieve measurements for which the device estimated its own measurement errors at 27 feet or less ("degree of precision" of less than 2). Conditions allowed the GPS III Plus to achieve this self-reported accuracy in all but a handful among the points that we visited and plotted using the device.

All of the measurements were taken between September and December 2000 -- after the end of Department of Defense imposed Selective Availability (partial satellite jamming). Garmin specifications for the device estimate positional accuracy of 15 meters on average (root-mean-square) without Selective Availability. Anecdotal evidence from other researchers suggests the error may be closer to 10 meters. Accuracy fluctuates according to solar-created atmospheric conditions at the level of ionosphere.

Our latitude/longitude measurements compared reasonably well with aerial photographs of areas containing points that we measured. In general, we feel comfortable claiming that the vast majority of our individual GPS measurements were accurate within 50 feet. Certainly, there is no systematic bias in the directions of positioning errors that could affect our study conclusions.

We uploaded latitude/longitude projections for locations to personal computers for analysis using GPS Communicator, version 1.00.034, from Nautical Software, Inc.

Local Geographic Information System Data and Projection Issues

The Planning Department in Springfield and the MIS Department in New Bedford provided copies of their geographic information system databases. Both departments provided the GIS maps of streets and real estate parcels together with files containing owner and land use data for each parcel. Fall River was in the process of creating this data, but it was not yet available as of December 2000.

The Springfield files were projected files in the North American Datum 1983 (NAD 83) Massachusetts Mainland State Plane feet coordinate system. In order to integrate them with other data, we first had to re-project them to geographic coordinates. To do this, we used Arcview 3.1's Projector! extension, identifying the projection of the Springfield files to be converted as standard Lambert conformal conic, State Plane 1983, Massachusetts Mainland[12] (map units in feet) and projecting them to geographic coordinates. The Springfield files matched nicely to the MassGIS aerial photographs after this transformation.

The New Bedford files were projected to the state plane using the North American Datum of 1927. Re-projection of these files to geographic coordinates (using the same methods as for the Springfield files but referring to the standard state plan 1927 data) leaves them out of synchronization with the photographs. After some experimentation, we found that a slight adjustment of the positional parameters for the files as input to the Projector! utility resulted in a good match.[13]

Local School Zone Maps

Paper school zone maps were provided by the New Bedford and Fall River planning departments. These maps were prepared to assist police and prosecutors in defining school zones. The Fall River map is dated January 7, 1998 and the New Bedford Map is undated.

We used these maps as comparisons, principally to assure that we had identified all schools and secondarily to confirm addresses, but not for analytic positioning purposes.

Census Bureau Derived Commercial Street Data

Our initial study plan had called for plotting drug-dealing incidents without visiting them by using street data derived from the U.S. Census Bureau's TIGER (Topographically Integrated Geographic Encoding and Referencing) files. We found, however, that the accuracy of measurements based on these files was inadequate for most of our purposes.

The Census Bureau has stated that TIGER street information "*at best* meets the established National Map Accuracy standards (approximately +/- 167 feet) [italics added]." U.S. Census Bureau, TIGER Frequently Asked Questions, at http://www.census.gov/cgi-bin/geo/tigerfaq?Q23 (reaccessed December 26, 2000).

This accuracy only applies to "nodes" – end points of street segments. Geo-coding of particular street addresses involves searching a TIGER derived database for the street segment containing the particular address. The latitude and longitude are estimated for the address by interpolating the address between the addresses at the nodes. To the extent that street addresses are not near the nodes and addresses are not evenly spaced, considerable additional error may be introduced in this step.

We did make limited use of Geographic Data Technology's Dynamap/2000 version 10.3 street datasets for Bristol and Hampden counties. These are part of a very well maintained and very heavily used national set of street data derived from the TIGER files. However, the on-the ground positional accuracy of GDT's files is fundamentally the same as the accuracy of the TIGER files, a point that GDT has soberly acknowledged. Don Cook, GDT President, "Creating Better Spatial Data," at http://www.geographic.com/news/news.cfm?Record ID=59 (February 10, 2000). In some areas, GDT has undertaken updates to upgrade the positional accuracy of the TIGER files, but GDT has not improved the positional data for Bristol or Hampden counties.

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[12] As in Arcview 3.1 supplied standard: Spheroid GRS80, Central Meridian -71.5, Reference Latitude 41, Standard Parallel 1 41.7166666667, Standard Parallel 2 42.6833333333, False Easting 656166.6666; False Northing 2460624.99975.

[13] The Arcview 3.1 standard parameters for State Plane – 1927, Massachusetts Mainland are: Spheroid Clark 1866; Central Meridian -71.5; Standard Parallel 1 41.7166666667; Standard Parallel 2 42.6833333333; False Easting 599999.9999390399; False Northing 0. We found that by decreasing False Easting to 599856 and False Northing to -36, we achieved a visually acceptable correspondence between the aerial photographs and the planning departments' GIS maps.

In New Bedford, where we did a full GPS mapping of drug-dealing incidents (see further below), we compared the results of geo-coding based on GDT's street data (using ArcView 3.2's geo-coding engine) with the results of direct GPS mapping for 111 addresses numbered (as opposed to specified by street corners). In 24 of 111 cases, latitude/longitude coordinates implied differences over 500 feet, and only 40 implied differences under 100 feet. This confirmed our decision that TIGER-based geo-coding was not generally acceptable for our purposes. When addresses were at street corners, we found that all but 2 of 63 comparisons differed by less than 167 feet and 41 (65%) differed by less than 100 feet. As further discussed below, we made use of geo-coded cross-street positions primarily as a supplementary reference.

Distance Measurement Methods

For our analytic purposes in this study, we needed to determine the distance from each drug dealing case to each school and to choose the closest school. We tested two distinct approaches to measuring the thousands of distances from cases to schools. First, we constructed a spreadsheet model that directly computed distances between each incident point and each school and, for each point, selected the nearest school.[14] Second, we used a user-developed Arcview 3.1 script that performed the essentially the same functions, but by using ArcView's distance computing logic.[15] We relied on the Arcview based script for all parts of our final analysis.

We received the same results by both methods in a test using Fall River data – we achieved minimum distance agreement within 0.3% for all but one of 104 cases (measuring to 49 schools); the off-case was within 2.1% which amounted to 1 foot. Similarly in a test using New Bedford Data, we achieved minimum distance agreement within 0.5% in all but 6 of 178 comparison cases, and among these the furthest off case was within 2.1%.

Accuracy and Sensitivity Analysis

Cases

For case locations, we relied primarily on direct GPS measurements at the drug dealing locations. We believe that the GPS equipment introduced no more than 50 feet of error in most cases.

The initial determination of the locations of the incidents was more error-prone than the mechanical process of geographic data collection. All police reports that we reviewed included a description of the incident location, but the following problems made our interpretation of those reports imperfect:

(a) at locations identified by cross streets, we were generally unsure which corner to measure from;

(b) even at locations identified by street addresses, we did not know exactly where in the relevant lot or adjacent sidewalk or street we should measure from;

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[14] In the spreadsheet approach, the essential steps were: (a) to create a local coordinate system by selecting the southwest most-feature to be measured and deeming it the origin; (b) to measure latitudes and longitudes as degree differences from that origin; (c) to convert these degree differences to feet using factors to reflect the earth's circumference adjusted for the closer spacing of meridian lines at higher latitudes (in New Bedford the factors were 272512.2 feet per degree of longitude and 364813.3 per degree of latitude); (d) doing basic analytic geometry to determine the distance from each incident point to each polygon segment of each school parcel; (e) comparing distances to choose the minimum distance school.

[15] In the ArcView approach, we used a script developed by Timothy Fox and dated April 28, 1998. It is titled "Nearest Feature Analysis Tool" and is available on the web from the ArcView community exchange website at http://gis.esri.com/arcscripts/details.cfm. This script loops through the cases (point) and school (polygon) features of geographic files and applies ArcView's "distance" function. The script does not check for the projection or lack of projection of the data sets supplied to it for comparison. To achieve correct results it is essential to save the geographic files in an appropriate projection. In our uses of the scripts we saved files in Massachusetts Mainland state plane 1983 (map units in feet).

(c) in some incidents, activity spread across multiple locations – in these incidents we used location of arrest if the defendant was charged with possession with intent to distribute, and our best understanding of location of transaction if actual distribution was charged;

(d) in a few incidents, police reports were ambiguous, describing intersections of streets that came close but did not intersect, for example, or numbered addresses that did not actually exist; we rejected some cases completely, but where a likely intention appeared we made measurements as best we could.

We believe that, in most cases, the ambiguities in location for measurement introduced under 100 feet of error. We are certain that errors of this type (a) introduced no systematic bias to the data; (b) were uncorrelated with GPS measurement errors per se; and (c) should not affect our conclusions.

Schools and Parks

Schools and parks present several issues. Except for the decisions about school definitions discussed at footnote 16, we do not feel that decisions made about inclusion or boundaries had a material impact on the study results.

(a) First, it was not feasible for us to confirm in every instance whether the schools or parks were in service during the fiscal year. The terms of Chapter 94C, s.32J, the school zone statute, apply whether or not school is in session. A legal ambiguity arises when a school may have been taken out of service or converted to other use. We included all of the facilities listed in our sources without checking for possible closure during the study period.

(b) It is possible that a few small schools may have been missed that are in operation, but we erred on the side of inclusion in the cases of inconsistency among lists. The appendices show the schools included in each city analysis.

(c) In reconciling alternative definitions of parcel boundaries, we erred towards inclusion in cases of doubt. We do not believe that these decisions had great impact on our analysis.

We were able to estimate the effects of these parcel boundary decisions precisely in New Bedford. New Bedford is the city in which we had complete coverage under several alternative sources. First, we inspected boundary definitions in the Assessor's office. These were not of such precision as to allow us to geographically locate boundaries, but they gave us a rough idea of position. Second, we then walked the boundaries of most of schools (39 of 41) with the hand held GPS. Third, we obtained the local GIS data and over-layed it together with our GPS-based boundaries over the aerial photographs. Finally, we defined our working school boundary definitions by selection of parcels from the local GIS. In many instances the final definition of coverage was expanded from the GPS-inspection data: We included recreational land that seemed, based on the aerial photographs, to be part of the complex of schools and refined the proper location of school boundaries.

Although we took great care in reviewing alternative school boundary definitions, the net differences were small between the definitions initially obtained by our GPS mapping visits and our final boundary definitions. Appendix page 29 compares, for each of the schools in New Bedford, the differences between our first and final analyses. It shows that the average school parcel size goes up by 6%, with half of that increase from a correction in the boundary of one parcel. Similarly, the average distance from schools to the nearest incident went down by 10.6%, but almost two-thirds of this decrease was due to the addition of two schools in the final analysis, as opposed to new decisions about the boundaries of the originally included schools. In Fall River, the net effect of aerial touch-up of the school-boundaries after GPS-plotting was to reduce distances by 2.5% and increase school parcel areas by 4.0%.

Results and Analysis

Cases, Charging and Disposition

Most drug dealing incidents (78%) in the selected cities occur within school zones, 29% in daytime hours on school days. Only a few (5%) occur in park zones. In reviewing Table 8, the reader should recall that our sample in New Bedford and Fall River includes all drug dealing incidents in the subject period, regardless of whether there was a school zone charge. By contrast, our sample from Springfield includes only persons actually charged with school zone offenses. It is striking that the differences between the samples from the several cities are nevertheless quite minor.

Table 8: Characteristics of Drug Dealing Incidents in Sample Cities

	Fall River	New Bedford	Springfield (School Zone Cases)	TOTAL
Sample Size	103	180	160	443
Within a school zone	84%	78%	74%	78%
Within a park zone	3%	2%	11%	5%
Within either a school or park zone	84%	79%	79%[16]	80%
Outside any school or park zone	16%	21%	21%	20%
Weekday	88%	82%	88%	86%
Weekend	12%	18%	13%	14%
Day (6AM - 6PM)	46%	43%	33%	40%
Evening (6PM – 10PM)	33%	42%	44%	41%
Night (10PM - 6AM)	21%	15%	23%	19%
School Session (September - June)	83%	82%	86%	84%
School Summer (July - August)	17%	18%	14%	16%
Weekday Day in School Session	36%	29%	24%	29%
No school: One or more of Summer, Weekend or After 6PM	64%	71%	76%	71%
Heroin and other Class A	49%	29%	23%	32%
Cocaine and other Class B	34%	41%	61%	47%
Marijuana and other Class D	15%	26%	16%	20%
Class E, miscellaneous minor	1%	2%	0%	1%
Unspecified Drug	2%	2%	0%	1%

Figure 1 shows visually the concentration of drug dealing incidents in school zones in downtown New Bedford.

[16] Table 8 indicates that only 79% of the school zone cases in Springfield were actually in a school or park zone. This number would increase to 87% if all institutions cited by the Springfield police were treated as schools in this analysis. There were 24 cases in which police reports mentioned institutions not on our list of schools. In thirteen of these cases, there are no alternative schools or parks on our list that are within 1000 feet. All of these 13 are titled as day care providers. See Appendix page 39.

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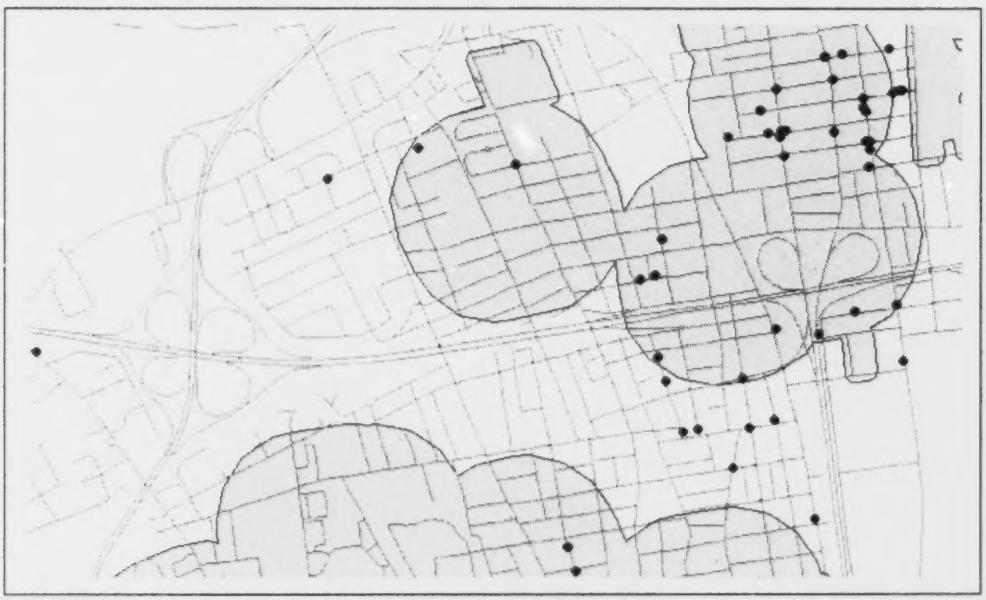
Figure 1: Drug Dealing Incidents (dots) and School Zones (shaded) in Downtown New Bedford



In Bristol County, because we had access to drug-dealing incidents whether or not the offenders were charged with school zone offenses, we could compute the rates at which offenders in different circumstances were charged with school zone offenses. Table 9 presents these results. A significant share of those dealing in school zones are *not* charged with school zone offenses (18% in Fall River; 30% in New Bedford). Note that although a material share of those dealing *outside* school zones *are* charged with violations, most incidents are within school zones. See discussion below at page 15.

Of the factors considered in Table 9, apart from location, only the drug sold makes a significant difference in the school zone charging decision: Heroin and cocaine dealers are more likely to be charged than marijuana dealers, although dealers of all illegal drugs are equally liable under the law. Although an effect of drug sold is apparent in Table 9 for both cities, only in Fall River is the contribution of drug sold statistically

significant.[17] The timing factors – time of day, day of week, month of year – show no powerful effects,[18] and, of course, these factors have no effect on legal liability for school zone penalties.[19]

Table 9: Percent of Drug Dealing Cases Charged with School Zone Violations in Bristol County

	Fall River	New Bedford
Overall (N = 103, 180) (100%, 100%)	77%	62%
Not within a school or park zone (N = 16, 38) (16%, 21%)	50%	34%
Within either a school or park zone (N = 87, 142) (84%, 79%)	82%	70%
Among Those Within School or Park Zone		
Weekday (N= 91, 148)	87%	71%
Weekend (N= 12, 32)	50%	65%
Day (6AM - 6PM) (N = 47, 77)	86%	70%
Evening (6PM - 10PM) (N = 34, 76)	83%	77%
Night (10PM - 6AM) (N = 22, 27)	71%	42%
School Session (September - June) (N = 85, 148)	85%	69%
School Summer (July - August) (N = 18, 32)	64%	71%
Weekday Day in School Session (N = 37, 52)	87%	62%
One or more of Summer, Weekend or After 6PM (N = 66, 128)	79%	73%
Heroin and other Class A (N = 50, 53)	95%	88%
Cocaine and other Class B (N = 35, 73)	84%	64%
Marijuana and other Class D (N = 15, 47)	36%	58%
Class E, miscellaneous minor (N = 1, 3)	0%	50%
Unspecified (N = 2, 4)	50%	100%

The most striking fact about District Court dispositions of school zone charges is that most do not involve convictions. Compromise dispositions are the rule. We did not attempt in this study to analyze severity of disposition at a fine level, only to determine whether dispositions involved a guilty plea to the charge of dealing within a school zone. It is clear, however, that a significant proportion of the many who do not take convictions to school zone charges are not incarcerated at all. Based on data from the District Attorney, in Springfield District Court, only 22% of school zone cases led to incarceration sentences (see Table 6). 34% were dismissed upon Superior Court indictments, but even at the Superior Court level, not all cases lead to incarceration --

[17] This is based on a regression analysis in SPSS 7.5 including all variables in Table 9 simplified as binary 0/1 variables.
[18] Some of the cell-to-cell differences are statistically significant, but these factors are not significant in regression.
[19] Chapter 94C, s. 32J explicitly states that the law shall apply "whether or not [the school] is in session."

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among 60 Superior Court school zone dispositions in Hampden County Superior Court that we reviewed, 45, or 75%, received committed time on one or more charges.[20]

Table 10: Percent of District Court School Zone Cases Leading to District Court School Zone Convictions or to Superior Court Indictments

	Fall River	New Bedford	Springfield
Overall (within or not within school/park zones) (N = 79, 112, 160)	13%	13%	32%
Not within a school or park zone (N = 8, 13 , 34)	25%	15%	21%
Within either a school or park zone (N = 71, 99, 126)	11%	13%	35%
Among Those Within School or Park Zone			
Weekday (N = 6, 17, 19)	11%	13%	33%
Weekend (N = 65, 82, 107)	17%	12%	47%
Day (6AM – 6PM) (N = 32, [illegible], 49)	13%	19%	37%
Evening (6PM – 10PM) (N = 24, 48, 49)	13%	6%	33%
Night (10PM – 6AM) (N = 15, 8, 28)	7%	25%	36%
School Session (September - June) (N = 62, 77, 104)	13%	10%	36%
School Summer (July - August) (N = 9, 22, 22)	0%	23%	32%
Weekday Day in School Session (N = 26, 24, 35)	15%	13%	40%
One or more of Summer, Weekend or After 6PM (N = 45, 75, 91)	9%	13%	33%
Heroin and other Class A (N = 39, 35, 30)	18%	26%	43%
Cocaine and other Class B (N = 27, 36, 76)	4%	8%	36%
Marijuana and other Class D (N = 4, 23, 20)	0%	0%	20%
Class E, miscellaneous minor (N = 0, 1, 0)	0%	0%	0%
Unspecified (N = 1, 4, 0)	0%	25%	0%

In Table 10, we combined indictments to Superior Court with school zone convictions, as representative of more serious dispositions. This simplifies the presentation, but overstates the anomaly in the second line of data in the table – a percentage of persons who were not actually guilty of dealing within a school zone (by our numbers) but who took a conviction: In the sample of 443 cases in the study, only 4 outside school/park zones were actually convicted of school zone charges in District Court.[21]

Table 10 shows that, as for charging, factors related to presence of children – time of day, day of week, season – do not have any powerful effects on case disposition. Drug class does have visible effects in the table, on inspection, but is not statistically significant in predicting disposition.

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[20] Note that not all of these Superior Court cases were included in the principal analysis of this study, because they could not all be matched with original District Court cases. See discussion circa Table 4.

[21] Of these 4, 1 is in Springfield and, in that case, we classified the incident as more than 1000 feet from a school because we did not include a day care facility as a pre-school. See note 16.

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One might speculate that the degree of proximity to a school *within a school zone* might play a role in school zone charge dispositions, even though the law does not distinguish degrees of proximity within a school zone. Our analysis suggests that it plays little role. Under Massachusetts law[22], distances to a school are to be measured as the crow flies. All distances in this paper are computed on that basis, except in the right hand side of Table 11. Experience and anecdotes indicate that in most school zone trials, the evidence of distance presented is a wheel measurement of a pedestrian path from the incident to the boundary of the school property. A wandering pedestrian path is necessarily longer than or equal to a straight line. Table 11 presents both straight line and pedestrian path distances[23] and suggests that neither has a powerful effect on the probability of school zone conviction. Regression analysis confirms that *for cases within 1000 straight line feet* there is no significant relationship between closeness to a school (by either measure) and the probability of conviction.[24] In other words, offenders dealing on school premises are not more likely to take a school zone conviction than offenders dealing at 900 feet from a school.

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[22] Commonwealth v. Robert F. Spano, 414 Mass. 178, 605 NE2d 1241 (Mass. 1993).

[23] The pedestrian path measurements were generated by using Arcview 3.1's distance length measurement function and tracing distances along apparent pathways from incident to school based on aerial photos and street maps.

[24] This statement is based on regression analysis of conviction/indictment (quantifying this variable as a 0 if no conviction and no indictment or a 1 if either) against raw distance by each measure, separately or with other variables. Some statistically significant coefficients emerge, but have the wrong sign (higher probability of conviction further away from the school).

Table 11: Percent of District Court School Zone Cases Leading to District Court School Zone Convictions or to Superior Court Indictments by Straight Line and Pedestrian Path Measurements (Analysis limited to cases within 1000 straight line feet of school but more than 100 feet from park)

Ranges in feet	*Straight Line Measurements*						*Pedestrian Path Measurements (Rough)*					
	Case Count			% Convicted/Indicted			Case Count			% Convicted/Indicted		
	FR	NB	SP	FR	NB	SP	FR	NB	SP	FR	NB	SP
0	1	1	3	0%	0%	33%	1	1	5	0%	0%	20%
0 to 100	3	8	8	0%	13%	38%	3	8	6	0%	13%	50%
100 to 200	6	2	3	17%	0%	67%	6	2	3	17%	0%	67%
200 to 300	7	12	21	0%	0%	52%	6	8	13	0%	0%	62%
300 to 400	7	17	16	14%	24%	31%	5	7	3	0%	0%	33%
400 to 500	7	6	21	0%	17%	24%	3	8	4	33%	25%	50%
500 to 600	7	5	14	14%	20%	21%	7	13	9	0%	15%	0%
600 to 700	8	9	12	13%	11%	42%	7	7	13	14%	14%	31%
700 to 800	10	9	7	20%	11%	14%	5	4	11	20%	25%	18%
800 to 900	11	17	2	18%	6%	0%	13	8	24	23%	25%	46%
900 to 1000	2	11	2	0%	18%	0%	4	9	5	0%	11%	20%
Over 1000	0	0	0	n/a	n/a	n/a	9	22	13	11%	5%	0%

Geography of the School Zone Law

As noted at the outset, a core purpose of the school zone law is to keep drug dealing away from schools. Figures 2 through 4 show the school/park zones in our sample cities. They show the downtown areas which account for most of the dealing. One can see that penalty zones are irregularly shaped and that offenders are unlikely to be able to tell whether they are in them.

Figure 2: Downtown Area Including 100 of 103 (97%) Sample Dealing Incidents in Fall River

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Figure 3: Downtown Area Including 155 of 180 (86%) Sample Dealing Incidents in New Bedford

Figure 4: Downtown Area Including 155 of 160 (97%) Sample School-Zone-Charged Dealing Incidents in Springfield

Drug dealers tend to offend in the vicinity of their homes. As shown in Table 12, 34% of incidents are within 500 feet of their homes and only 21% are more than 10,000 feet away or in another city.[25] In 73% of the incidents that occur in a school zone, the offender resides in a school zone (although their home is not necessarily closest to the same school).

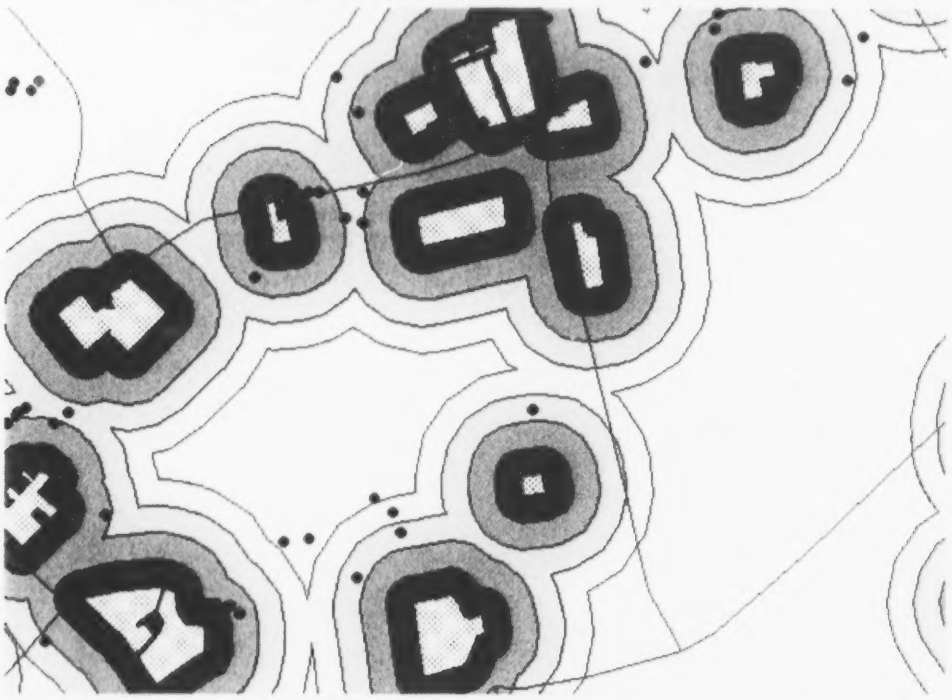
[25] Qualifying this point, note that among those arrested within 500 feet of their homes, 3.5 (92 of 150) were arrested in conjunction with the execution of a search warrant. 43 of the 249 cases more than 500 feet from home but in the same city are also pursuant to a

Table 12: Distances between Incident Address and Offender Address – Combined Fall River, New Bedford, Springfield Sample of District Court Cases in Fiscal 1999.

In Same City	Number	% of Total
In home or within 500 feet of home	150	34%
In same census tract (neighborhood), but over 500 feet	46	10%
Different census tract and from 500 to 10000 feet from home	152	34%
Different census tract and over 10000 feet from home	49	11%
Other Cities	44	10%
Unknown residence	2	0%
TOTAL	443	100%

Given the chaotic patterning of school zones and the frequent proximity of dealing to homes of dealers resident in school zones, one would not predict that the school zone law would steer drug dealers effectively away from schools. Figure 5 shows visually how in downtown Springfield, the density of drug dealing incidents does not decrease as one approaches schools.

Figure 5: Schools in Downtown Springfield Surrounded by 250 Foot Rings out to 1000 Feet (Drug Dealing Incidents Charged as School Zones Marked as Dots)



search warrant. We located incidents at the point of sale where defendants were charged with actual distribution and at the point of arrest where defendants were charged with possession with intent to distribute.

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Table 13 shows this quantitatively.[26] It shows that at all distances below 1000 feet, except on school premises per se, drug dealing is denser than it is at distances above 1000 feet – the precise opposite of what we would hope to find if the law were effective. The table says, for example, that in poverty areas in Fall River, there were 11 drug dealing incidents per square mile in the area zero to 250 feet from a school, but only one incident per square mile in the area over one thousand feet per school. For Springfield, results over 1000 feet are "n/a" because drug-dealing cases which were not charged as school zone cases were not provided to the study. However, one can confirm from these data for Springfield that *within school zones*, there is not a drop-off in density as one moves closer to schools, as one would hope to see if one were successfully deterring dealing near schools. For example, in extreme poverty areas in Springfield, the chart shows that the area within 250 feet of schools has a density of 44, while the density is only 31 in the 750 to 1000 foot area.

Table 13: Drug Incidents per Square Mile in Fiscal 1999 (*Not for Cross-County Comparison*: In Springfield only includes those charged as School Zone Offenses and within those, only includes 40%. In Fall River/New Bedford, includes all – see Methodology.)

	Sub-division of Areas by Distance from Schools						
Areas by City and Poverty Level	On School	0 to 250 Feet	250 to 500 Ft.	500 to 750 Ft.	750 to 1000 Ft	Over 1000 Feet	All Distances
Fall River Non-poverty	6	13	7	11	6	0	2
Fall River Poverty	0	11	47	39	23	1	11
New Bedford Non-poverty	0	9	23	6	13	2	4
New Bedford Poverty	7	34	44	44	51	14	29
Springfield Non-poverty	0	2	4	2	2	n/a	1
Springfield Poverty	8	28	24	8	4	n/a	8
Springfield Poverty (extreme)	0	44	72	50	31	n/a	33
All Areas Together	3	15	21	15	12	2	5
N for All Areas Together	6	55	112	90	77	103	443

NOTE: "Poverty" areas are census tracts with poverty rates between 20 and 40%. Extreme poverty areas are those with poverty rates over 40%. See note 3.

It is often said that the school zone law has a particularly harsh impact on poverty areas in the centers of older cities where there are many small neighborhood schools.

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Within these three selected cities, the effect is real, but modest. Poverty areas do have two to three times more schools per unit area than do non-poverty areas in the three cities in our study, but the schools in non-poverty areas are larger. On net, the school/park zones in relationship to neighborhoods are roughly twice as large in poverty areas as in non-poverty areas – see last column of Table 14. Drug dealing is far denser in poverty areas, but this reflects a combination of higher rates per capita and higher density in poverty areas – see the second block of columns in Table 14.

Table 14: Characteristics of Non-Poverty, Poverty, and Extreme Poverty Areas combined across Fall River, New Bedford and Springfield.

	Pop.	Area in Sq. Mi.	Pop. per Square Mile	Drug Dealing Cases	Drug Dealing Cases per Sq. Mile	Drug Dealing Cases per 100000 People	Number of Schools (count twice if span areas)	Schools per Sq. Mi. (with over count)	Merged Area of School/ Park Zones in Sq. Mi.	Merged School Zones as % of Merged School/ Park Zones	Merged School/ Park Zones as % of Area
Non-poverty	223047	75.1	2969	136	2	61	116	1.5	18.5	86%	25%
Poverty	96143	13.3	7206	205	15	213	53	4.0	6.2	91%	47%
Poverty (extreme)	30418	3.1	9722	102	33	335	14	4.5	1.7	91%	56%
All Selected Cities	349608	91.6	3817	443	5	127	167	1.8	26.4	87%	29%

In considering the modest contrasts in Table 14, recall that we are looking in this study only at three central cities containing large poverty areas. A state-wide comparison including suburbs would show wider contrasts between poverty and non-poverty areas. Non-poverty areas in the selected cities are likely to more troubled than non-poverty areas state-wide. As an illustration, computation shows that within our study cities, those non-poverty neighborhoods with poverty rates below the statewide median neighborhood poverty rate have 11 drug dealing incidents per 100,000 persons (not shown in Table 14) as compared with 61 for all non-poverty areas in our cities (shown in Table 14).

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[26] The area computations in Table 13 and Table 14 were done using an extension of Arcview called Xtools (version of May 9, 2000) developed by Mike Delaune of the Oregon Department Forestry and available at http://www.odf.state.or.us/stateforests/gis/Documents/Xtools.htm

[27] See discussion at Table 2 above.

[28] See discussion at Table 1 above.

Conclusions

We started with two questions: (1) Are charging and sentencing in school zone cases shaped by the legislative goal of keeping drug dealing away from schools? (2) Is the law successful in keeping drug dealing away from schools? The data presented here suggest a negative answer to both questions.

The data presented in this study are highly consistent with anecdotal evidence from other counties. The majority of drug dealing cases occur within school zones. The majority of school zone charges are reduced to lesser charges and the mandatory sentence waived. Time of day, day of week, month of year, nearness to schools within the zone all have little effect on charging and case resolution. Of course, the law does not require that they should, but given that 1000-foot zones cover so much territory, one could argue that it would be consistent with legislative purpose to prioritize dealing incidents closest to the places children play. It is worth noting that very few drug dealing cases actually involve children. In our combined sample, only 4 cases involved charges of dealing to minors or using minors in sales.

Police and prosecutors have made the best of a bad situation and used the law to further the legitimate goal of fighting drug dealing in general. The legislature chose the school zone boundary distance of 1000 feet with no empirical basis to indicate how it would work in our older cities. The data in this study show that dealing is as prevalent near schools as it is further away. Zones are so close together that is impossible for both drug dealers and children to distinguish "drug-free" zones from the rest of the city.

If we sought to have a law that would effective guide drug-dealing further away from schools, it would

(a) keep dealers away from schools by defining a small enough zone that it could be consistently recognized -- 100 to 250 feet around a school;

(b) use pedestrian path measurement, rather than straight line measurement, so that both police and dealers could readily distinguish school zone violations;

(c) limit the applicability of the law to hours in which school may reasonably be expected to be in session.

A statutory structure that gave more sensible guidance to both offenders and law enforcement officers might more effectively protect schools and the general public.

Available Data Inventory

The geographic data sets used in the final analysis in this study are available for public access to properly cleared researchers. For the geographic data from Springfield and New Bedford which is partially derivative from city-owned GIS data, permission from the respective cities is required. The case/home (inc/hom) data sets, as collected and geographically analyzed, are available only to researchers who are authorized in writing both by the Criminal History Systems Board and the participating District Attorneys.

The available files are named by the convention "ccdddppn.ext," where cc are city codes, ddd are data type codes, pp are the projection of the data, n is an optional version number and ext is the application appropriate file extension:

City codes (ccc)	fr	Fall River
	nb	New Bedford
	sp	Springfield
Data type codes	inc	Cases/Incidents
	hom	home addresses of defendants
	sch	School real estate parcels
	nsc	Non-school points (Springfield only; see discussion)
	prk	Park real estate parcels
	gsc	Manually recorded school parcel positions (comparison value only)
	bnd	municipal boundaries (must purchase from source)
	tct	tract boundaries (must purchase from source)
Projections	go	Geographical, latitude/longitude data (unprojected)
	83	Lambert conformal conic, State Plane 1983, Massachusetts Mainland[29] – Map Units in Feet

[29] As in Arcview 3.1 supplied standard: Spheroid GRS80, Central Meridian -71.5, Reference Latitude 41, Standard Parallel 1 41.7166666667, Standard Parallel 2 42.6833333333, False Easting 656166.6666; False Northing 2460624.99975.

Appendices

Fall River Schools

FALL RIVER SCHOOLS		GPS Visit-Based Boundaries			Photo Enhanced Boundaries		
Name	Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
A S LeTourneau	DOE and PB	0	n/a	1.376	0	n/a	1.468
Antioch	DOE and PB	0	n/a	0.267	0	n/a	0.498
Bishop Connolly High	DOE and PB	0	n/a	35.397	0	n/a	48.255
BMC Durfee High	DOE and PB	2	0	57.14	2	0	67.283
Boys Club Alt	DOE and PB	6	0	1.193	6	7	1.056
Brayton Avenue	DOE and PB	4	739	0.87	4	739	0.974
Charles V Carroll	DOE and PB	1	252	2.151	1	265	2.171
Coughlin	DOE and PB	1	212	0.733	1	212	0.75
Davol	DOE and PB	13	336	0.549	11	296	0.614
Edmond P Talbot Middle School	DOE and PB	0	n/a	7.41	0	n/a	10.486
Espirito Santo	DOE and PB	2	147	1.493	2	171	1.435
Fall River Alt	DOE and PB	0	n/a	1.383	0	n/a	1.36
Fall River Deaconess Home	DOE only	1	861	0.209	1	861	0.214
Fowler Elementary	DOE and PB	0	n/a	0.983	0	n/a	0.934
Frank M Silva	DOE and PB	13	85	0.812	13	83	1.188
Greater Fall River/Diman Reg Vo Tech High	DOE and PB	0	n/a	26.284	0	n/a	27.933
Harriet T Healy	DOE and PB	4	539	1.064	4	521	1.148
Hector L Belisle	DOE and PB	0	n/a	3.059	0	n/a	3.347
Henry Lord Middle	DOE and PB	1	887	13.899	1	887	14.53
Highland	DOE and PB	0	n/a	2.47	0	n/a	2.512
Holy Name	DOE and PB	0	n/a	2.498	0	n/a	2.005
Hugo A Dubuque	DOE and PB	1	303	1.073	1	296	1.008

FALL RIVER SCHOOLS		GPS Visit-Based Boundaries			Photo Enhanced Boundaries		
Name	Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
James Tansey	DOE and PB	0	n/a	2.95	0	n/a	2.95
John J Doran	DOE and PB	1	669	1.591	1	672	1.596
John J Doran Annex	DOE and PB	5	424	0.336	5	385	0.458
Laurel Lake	DOE and PB	2	48	2.032	2	53	1.98
Leontine Lincoln	DOE and PB	10	267	0.633	10	253	0.641
Matthew J Kuss Middle School/The Learning Cen	DOE and PB	0	n/a	1.543	0	n/a	1.491
McCarrick	DOE and PB	0	n/a	0.606	0	n/a	0.64
Morton Middle	DOE and PB	0	n/a	1.949	0	n/a	2.043
NB Borden	DOE and PB	8	182	1.055	7	196	1.049
Notre Dame	DOE and PB	5	403	1.769	2	411	1.959
Osborn Street	DOE and PB	0	n/a	0.787	0	n/a	0.997
Ralph M Small	DOE and PB	1	525	6.982	1	536	6.737
Samuel Watson	DOE and PB	1	671	1.235	1	671	1.235
Slade	DOE and PB	7	321	2.021	7	322	2.071
Spencer Borden	DOE and PB	0	n/a	3.291	0	n/a	5.337
Ss Peter and Paul	DOE and PB	1	179	1.474	1	179	1.512
St Anne	DOE and PB	0	n/a	1.769	0	n/a	3.004
St Jean Baptiste	DOE and PB	0	n/a	1.18	0	n/a	1.198
St Michael	DOE and PB	3	1188	1.287	3	1187	1.259
St Stanislaus	DOE and PB	0	n/a	0.475	0	n/a	0.514
St Vincent	DOE and PB	2	2696	2.484	2	2644	2.972
Stone	DOE and PB	0	n/a	1.206	0	n/a	1.445
Susan H Wixon	DOE and PB	1	816	1.074	1	805	1.049
Westall	DOE and PB	1	294	1.515	1	317	1.236
William Connell	DOE and PB	5	308	0.558	5	292	0.649
William J Wiley	DOE and PB	0	n/a	0.826	0	n/a	0.988
William S Greene	DOE and PB	1	697	2.73	1	705	2.56
Henry Lord Middle (Old)	PB Only (School Zone Map)	n/a	n/a	n/a	0	n/a	1.834
Aldrich Center	PB Only (School Zone Map)	n/a	n/a	n/a	5	98	0.517
Dominican Academy	PB Only (School Zone Map)	n/a	n/a	n/a	1	609	1.199

FALL RIVER SCHOOLS		GPS Visit-Based Boundaries			Photo Enhanced Boundaries		
Name	Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
St Joseph	PB Only (School Zone Map)	n/a	n/a	n/a	0	n/a	1.348
Christian School of Fall River	PB Only (School Zone Map)	n/a	n/a	n/a	0	n/a	0.799
Third Baptist School	PB Only (School Zone Map)	n/a	n/a	n/a	0	n/a	0.13
Early Childhood Development Center	PB Only (School Zone Map)	n/a	n/a	n/a	0	n/a	0.386
Sum of Cases and Averages of near distance and acreages		103	502	4.2	103	489	4.4

Source Notes:

The sources for the schools (and their addresses) were the Department of Education and the City of Fall River Planning Department (PB) School Zone Map of 1/7/98. All the DOE schools were GPS mapped and then touched up with aerial photographs. The final seven schools were located based on street address using street segments from GDT and traced based on aerial photographs.

Bristol Community College, appearing on the Planning Board School Zone map, was excluded as not a school within the statute.

In one case, police listed a school we could not locate: "St. Louis School."

Fall River Parks

FALL RIVER PARKS				
Name	Source	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Abbott Court Playground	PD	3	953	4.838
Aetna Street Playground	PD	3	844	0.380
Bank St. Tot Lot	PD	9	34	0.147
Bicentennial Park	PD	5	782	12.071
Britland Park	PD	5	792	18.072
Columbus Park	PD	4	756	1.776
Davis Playground	PD	2	3208	1.244
Desmarais Playground	PD	1	849	7.916
Father Kelly Park	PD	4	582	5.200
Father Travassos Park	PD	5	499	5.626
Griffin Playground	PD	24	253	1.215
Jose Silva Park	PD	2	303	2.777
Kennedy Park	PD	7	415	48.333
Lafayette Park	PD	4	243	11.200
Maplewood Park	PD	4	1385	12.056
Massasoit Tot Lot	PD	11	232	0.456
North Park	PD	1	114	29.061
Pulaski Playground	PD	2	0	4.038
Ruggles Park	PD	2	291	8.631
Thomas Chew Field	PD	4	160	3.907
Turner Playground	PD	1	1203	0.620
Sum of incidents and averages of closest incident and park acreage		103	662	8.6

Source Notes: PD indicates appeared on Park Department's printed list. The printed list includes bounding streets for each site. We referred to aerial photographs to draw boundaries. GDT street data served to guide us to photograph areas. All items on the list were located. However, the following items were located with higher uncertainty: Aetna Street Playground, Davis Playground and Jose Silva Park.

New Bedford Schools

NEW BEDFORD SCHOOLS		GPS Visit-Based Boundaries			GIS Parcel Based Boundaries			
Name	Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)	Number of Parcels in School	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
Abraham Lincoln	DOE and PB	5	731	2.268	2	5	724	4.383
Alfred J Gomes	DOE and PB	9	146	10.406	3	8	137	10.695
Betsey B Winslow	DOE and PB	2	1699	5.684	1	2	1703	5.584
Casmir Pulaski	DOE and PB	1	617	20.066	2	1	48	25.941
Charles S Ashley	DOE and PB	1	3177	4.021	1	1	3179	3.799
Clifford School	DOE Only (not on SZ map either)	10	693	2.198	3	10	758	1.689
Elizabeth Carter Brooks	DOE and PB	1	1824	9.879	2	1	1836	10.097
Ellen R. Hathaway	DOE and PB	2	524	2.05	1	2	557	1.772
Elwyn G Campbell	DOE and PB	0	n/a	9.108	1	0	n/a	8.4
George Dunbar	DOE and PB	2	706	1.023	1	2	728	0.845
Greater New Bedford Voc/Tech	DOE and PB	1	1254	40.524	8	1	1074	45.172
Hayden/ McFadden	DOE and PB	13	453	3.818	2	13	476	4.229
Holy Family, Holy Name	DOE and PB	4	976	0.719	1	4	983	0.819
Horatio Kempton	DOE and PB	2	366	1.932	1	2	378	1.595
Ingraham Pre-School Center	DOE and PB	16	72	1.441	1	9	74	1.25
James B Congdon	DOE and PB	0	n/a	1.545	1	0	n/a	1.291
Jireh Swift	DOE and PB	2	494	1.218	2	2	470	1.332
John Avery Parker	DOE and PB	10	66	2.645	1	10	28	2.508
John B Devalles	DOE and PB	4	829	2.654	1	4	819	2.567
John Hannigan	DOE and PB	12	1073	1.505	1	0	n/a	1.556
Kennedy Center	DOE Only	3	379	1.239	1	3	394	1.441
Keith Junior High	DOE and PB	2	83	10.538	1	2	48	11.339
Mount Pleasant	DOE and PB	3	234	4.603	1	3	270	4.206
New Bedford High	DOE and PB	4	3	55.164	8	4	0	65.178
Normandin Jr. High	DOE and PB	0	n/a	10.314	1	0	n/a	9.679
Our Lady Mount Carmel	DOE and PB	3	264	0.973	1	3	251	1.925
Phillips Avenue	DOE and PB	4	148	0.81	1	4	160	0.704
Roosevelt Junior High	DOE and PB	0	n/a	6.498	3	0	n/a	5.908

NEW BEDFORD SCHOOLS		GPS Visit-Based Boundaries			GIS Parcel Based Boundaries			
Name	Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)	Number of Parcels in School	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
Saint Anthony Elementary	DOE and PB	37	4	1.183	2	37	6	1.095
Saint James Saint John	DOE and PB	5	0	1.449	1	5	13	1.54
Saint Joseph	DOE and PB	3	704	0.876	1	3	467	1.829
Saint Mary	DOE and PB	0	n/a	1.454	1	0	n/a	1.439
Sarah D Ottiwell	DOE and PB	4	982	2.742	1	4	983	2.388
Schwartz Rehab	DOE Only	0	n/a	0.948	3	0	n/a	0.87
Sgt Wm H Carney Academy	DOE and PB	4	393	4.837	2	3	393	5.189
Thomas A Green	DOE Only	5	215	0.442	1	6	232	0.407
Thomas Rodman	DOE and PB	3	419	0.694	1	3	441	0.764
West Side Jr-Sr HS	DOE and PB	3	675	3.642	4	3	708	4.566
William H Taylor	DOE and PB	0	n/a	0.909	1	0	n/a	2.003
School Administration (County Street)	PB Only	Not included in first analysis			1	1	230	2.514
Church of the Firstborn	Only on school zone map	Not included in first analysis			2	19	60	0.318
Sum of incidents and averages of closest incident and park acreage		180	631	6.0		180	564	6.4

Source Notes:
DOE refers to the Department of Education list. PB refers to the schools appearing in a location point coverage (set) supplied by the New Bedford Planning Department. In addition, we consulted the Planning Department's school zone map. We included all items appearing on any of these three sources. Note that what the planning board calls "Alternative High School" we mapped as West-Side Junior High. Regarding Clifford School: It no longer appears on DOE website, but is so identified on the Assessor's database.

Observations:
(1) Most of the change in the area average derives from the correction of a mapping error which omitted half of the athletic field adjacent to the high school. Incorporation of this added ten acres to the high school and 0.24 to the average acreage.
(2) Almost two-thirds of the decrease in the closest incident average is due to the addition of two schools that are closer to incidents than others.

Police Identified Schools not Included in the Analysis:
(1) Police listed the "Wilks Library" as a near school in one case -- not located.
(2) Police listed the "New Bedford Christian Academy" in four cases. We were unable to locate this facility, but it may correspond to the Planning Department school zone map item named "Church of the Firstborn."

New Bedford Parks

NEW BEDFORD PARKS		Parcel Based Boundaries			
Name	Source	Number of parcels in park	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Ashley Park	PD/PB	1	7	1071	4.31
Baby Kenney Tot Lot/Monte Playground	PD/PB	1	14	37	0.738
Bathhouse	PD only	1	0	n/a	0.625
Beauregard-Pina Playground	PD/PB	1	10	220	0.205
Bonney Street (Tripp) Playground	PD/PB	1	3	440	0.533
Brooklawn Park	PD/PB	4	12	11	81.658
Buttonwood Park	PD/PB	5	9	0	96.666
Cedar Street Tot Lot	PD only	1	3	926	0.123
Clasky Park	PD/PB	1	16	568	7.203
Clegg Field	PD/PB	1	0	n/a	3.953
Dias Field Playground	PD/PB	1	9	683	8.062
East Beaches/O'Toole Playground	PD/PB	7	0	n/a	7.333
Edward James Playground	PD/PB	1	0	n/a	0.072
Francis Field	PD/PB	1	12	113	12.842
Hathaway Playground	PD/PB	1	4	456	1.132
Hazelwood Park	PD/PB	5	0	n/a	23.349
Hicks/Logan Playground	PD/PB	3	13	247	1.554
Magnett Playground	PD/PB	1	2	1221	1.892
Marine Park	PD/PB	1	0	n/a	8.542
Mother Teresa Playground	PD only	1	4	488	0.819
Mott Street Playground	PD/PB	1	0	n/a	14.135
Pine Hill Park	PD/PB	2	0	n/a	19.093
Pulaski Park	PD/PB	1	1	1525	0.987
Riverside Playground	PD/PB	4	49	163	22.499
Roberto Clemente Park	PD/PB	1	2	683	0.096
Ruth Street Neighborhood Common	PD only	1	10	127	0.153

NEW BEDFORD PARKS		Parcel Based Boundaries			
Name	Source	Number of parcels in park	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Victory Park	PD/PB	3	0	n/a	22.536
Sum of incidents and averages of closest incident and school acreage			180	499	12.6

Source Notes:

(1) PD indicates appeared on Park Department's printed list and/or website; PB indicates appeared on Planning Department list.

(2) The preceding list contains 27 items. It includes all items listed by the Park Department excepting the West End Playground (part of a school area) and the Dartmouth rifle range. The "Dike Properties" listed were hard to pinpoint, but we believe they are included in the areas above.

(3) The Planning Board's list of parks used a broad definition of parks. It included a number of parcels we did not include:

- 28 school properties appearing on our school list;
- 17 housing properties that did not appear in photographs to represent parks although they may include some open space;
- 8 open space areas that may have been parks, but are, in any event towards the perimeter of the City away from incidents (including Fort Rodman, the golf course, conservation land, the Pierce nature trail, the New Bedford recreational trail and Palmer's Island).
- 2 arguable playgrounds not so recognized by the park deparments, consisting of an area by the Exit 22 ramp and a small city water-front property (the Rasmus Tonneson Park).
- The New Bedford Boys Club
- The Salvation Army Play Area

(4) We additionally scanned the assessor's database for "parks" and "playgrounds" -- this yielded several traffic medians (Andrews-Dahill, Battery D and Triangle) which we excluded and a fairly remote "Mill River Park" which did not appear on other lists and we did not include.

Police Reports: Not all cases specify the near school or park and no parks were cited. There were 4 cases which could have cited a park and the parks may have been the main predicate of these cases.

Springfield Schools

SPRINGFIELD SCHOOLS		Parcel Based Boundaries		
Name	List Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
Alfred G Zanetti	DOE/PB	0	n/a	1.621
Alice B Beal Elementary	DOE/PB	0	n/a	9.352
Arthur T Talmadge	DOE/PB	0	n/a	9.415
Bridge Academy	DOE/PB	1	588	0.851
Brightwood	DOE/PB	0	n/a	1.764
Cathedral High	DOE/PB	0	n/a	27.146
Central High School	DOE/PB	1	0	28.445
Chestnut Street Middle/S.A.G.E	DOE/PB/DOE	0	n/a	10.193
Commerce High School	DOE/PB	9	50	8.47
Curtis Blake Day School	DOE (Day School part)	0	n/a	14.579
Daniel Brunton	DOE/PB	0	n/a	10.885
Dryden Memorial	DOE/PB	0	n/a	9.531
Edward P Boland Learning Cente	PB	1	181	3.051
Elias Brookings	DOE/PB	15	213	7.75
Experiment With Travel Inc	DOE	1	935	0.669
Forest Park Middle	DOE/PB	0	n/a	2.604
Frank Freedman	DOE/PB	1	944	10.189
Frederick Harris	DOE/PB	0	n/a	3.937
Gerena	DOE/PB	6	639	5.035
Glenwood	DOE/PB	0	n/a	2.535
High School of Science	DOE/PB	0	n/a	18.53
Hiram L Dorman	DOE/PB	0	n/a	3.281
Holy Cross School	DOE/PB	0	n/a	3.624
Holy Name	DOE/PB	3	43	3.776
Homer Street	DOE/PB	7	222	1.898
Immaculate Conception	DOE/PB	0	n/a	2.124

SPRINGFIELD SCHOOLS		Parcel Based Boundaries		
Name	List Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
Indian Orchard Elementary	DOE/PB	0	n/a	9.386
Island Pond Pre-K Center	DOE/PB	0	n/a	2.17
John F Kennedy Middle	DOE/PB	0	n/a	25.655
John J Duggan Middle School	DOE/PB	1	766	22.233
Kathleen Thornton School	DOE (included but poss defunct)	3	393	1.412
Kensington Avenue	DOE/PB	4	386	2.513
Liberty	DOE/PB	0	n/a	2.736
Lincoln	DOE/PB	5	613	2.149
Marcus M. Kiley Middle School	DOE/PB	0	n/a	35.667
Margaret C Ells	DOE/PB	2	321	162.514
Martin Luther King Academy	DOE (is part, but incl. all of Comm. Center)	4	0	1.898
Mary Lynch	DOE/PB	0	n/a	24.837
Mary O Pottenger	DOE/PB	1	370	17.351
Mary Walsh	DOE/PB	0	n/a	25.78
Mass Career Dev Institute	DOE/PB	0	n/a	2.488
Mill Pond	DOE/PB	0	n/a	4.863
Milton Bradley	DOE/PB	29	55	4.753
Mount Carmel	DOE/PB	3	268	0.937
North Star Charter School	Police report confirmed by phone	12	207	0.115
Orchard Children's Corner	DOE (is part, but incl. all of shopping plaza)	0	n/a	9.489
Our Lady Sacred Heart	DOE/PB	1	3870	1.676
Our Lady of Hope	DOE/PB	4	224	5.726
Pioneer Valley Christian	DOE/PB	0	n/a	25.404
Pioneer Valley Montessori	DOE/PB	0	n/a	0.756
Putnam Voc Tech High Sch	DOE/PB	0	n/a	16.763
Rebecca M Johnson	DOE/PB	6	1	10.087
Sabis International Charter Sc	PB	0	n/a	10.098
Sacred Heart Elementary	DOE/PB	5	1105	2.09
Samuel Bowles	DOE/PB	1	1575	3.955
Shriners Hospital	DOE	0	n/a	7.037

SPRINGFIELD SCHOOLS		Parcel Based Boundaries		
Name	List Source	Incidents for which school is nearest	Nearest incident (ft.)	Area of school (acres)
Springfield Academy	DOE/PB	4	242	3.753
Springfield Christian	DOE/PB	4	306	1.222
St Joseph and Saint Thomas	PB	0	n/a	1.423
St Mary's Parochial School of	Neither; identified in parcel review	0	n/a	1.087
St Matthew	DOE/PB	1	782	1.468
Sumner Avenue	DOE/PB	2	2282	
The MacDuffie	DOE/PB	18	213	11.762
Thomas M Bailliet	DOE/PB	0	n/a	6.481
Three Angels SDA School	DOE	0	n/a	0.566
Van Sickle	DOE/PB	0	n/a	7.502
Warner	DOE/PB	1	747	6.002
Washington	DOE/PB	0	n/a	2.133
White Street Elementary	DOE/PB	3	263	2.301
William N DeBerry	DOE/PB	2	503	5.508
Sum of Cases and Averages of Minimum Distance and Acreage		160	585	10.9

Source Notes:

This list combines Planning Department and Department of Education School Lists. All schools cited in police reports and not classified as nursery/day-care/music appear here. Parcel-based mapping was supplemented with aerial photographic review, and city-owned adjacent parcels appearing to constitute parts of the school campuses were included.

Further Note on Comparison to Police Reports: We were unable to locate the "Christian Science School" – a police report in one case referred to "the private school on State Street" and the corresponding indictment used this name. There is a Christian Science reading room on Main Street. Also, the "Milton Street School" referred to in one Police Report appears, based on the incident location, to be the Indian Orchard Elementary school on Milton Street.

Springfield Parks

SPRINGFIELD PARKS				
Name	Source	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Acorn Park	pk	2	488.12	16.629
Adams Playground	pd	0	n/a	0.114
Angelina Park	pd	1	5406.18	3.255
Armory National Historic Park	st	9	4.25	18.497
Atwater Park	tr	0	n/a	9.207
Barrows Park	pk	4	567.22	1.627
Bircham Park	tr	0	n/a	1.22
Blunt Park	Pd	1	2527.54	1.992
Breckwood Park	Tr	1	226.57	27.647
Brunton Park	Pd	0	n/a	0.11
Calhoun Park	Pd	9	62.53	2.4
Connecticut River Access Park	St	0	n/a	1.546
Cottage Hill Park	No	1	32.98	3.52
Court Sq. Park	Pk	0	n/a	1.927
Da Vinci Park	Pk	2	1514.39	0.405
Edward J. Murphy Park	No	0	n/a	1.316
Emerson Wight	Pd	13	169.53	6.879
Emily Bill Park	Pd	0	n/a	4.242
Five Mile Pond Park	Pk	0	n/a	23.033
Forest Park	Pd	5	589.27	689.675
Forest Park Extension	Pd	0	n/a	77.588
Garfield Triangle	Tr	0	n/a	0.121
Gerrish Park	Pk	15	39.14	1.068
Godfrey Park	Pk	0	n/a	0.849
Gralia Rd. Park	Pk	0	n/a	2.368

SPRINGFIELD PARKS				
Name	Source	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Greenleaf Park	Pd	0	n/a	26.339
Gunn Sq. Park	Pk	0	n/a	0.778
Gurdon Bill Park	Pd	4	687.7	6.607
Harriet Tubman Park	Pk	0	n/a	1.697
Hennessey Park	Pk	7	0	1.279
Hubbard Park	Pd	0	n/a	39.253
Jaime Ulolloa Park	Pd	6	466.77	3.363
John A. Sullivan Park	No	5	72.68	8.069
Kenefick Park	Pd	0	n/a	12.361
Lake Lorraine State Park	St	0	n/a	0.365
Magazine Playground	Pd	6	968.49	3.126
Marina Park	St	0	n/a	10.786
Mary Shea Park	Pk	0	n/a	0.613
Mcknight Park	Pk	1	484.05	0.43
Merrick Park	No	1	44	0.551
Morriss Park	Pk	1	782.01	5.043
Myrtle St. Park	Pd	0	n/a	1.553
Nathan Bill Park	Pd	0	n/a	19.024
North Branch Park	Pk	1	1951.74	86.877
North Branch Tributary Park	Pk	0	n/a	27.697
Oakland St. Park	No	6	45.53	9.766
Pendleton Ave. Park	Pk	2	775.61	1.556
Quadrangle Park	Pk	18	274.85	1.696
Rio Vista Park	No	0	n/a	2.559
Riverfront Park	Pk	0	n/a	6.004
South Branch Park	Pk	1	1433.6	124.837
Stearns Sq. Park	Pk	11	348.17	0.408
Stebbins Park	Pk	8	47.19	4.765
Tapley Playground	Pd	13	125.41	3.309
Thomas St. Playground	No	5	365.01	1.698

SPRINGFIELD PARKS				
Name	Source	Incidents for which park is nearest	Nearest incident (ft.)	Area of park (acres)
Treetop Park	Tr	0	n/a	17.756
Valentine Park	No	0	n/a	9.024
Van Horn Park	Pd	1	6062.12	115.841
Walsh Park	Pd	0	n/a	9.714
Wason Avenue Park (Mason?)	Tr	0	n/a	1.626
Wesson Park	No	0	n/a	19.787
Woodland Park Cons. Area	Pk	0	n/a	39.605
Sum of Cases and Averages of Minimum Distance and Acreage		160	885	24.6

Source Notes:

This list is based on the open space parcel list from the Springfield Planning Department. We culled those that have a site name including any of the words "park", "playground" or "field" (or, in a special case, "Emerson Wight"). From these 96 parcels we further culled 34 properties covered by our school data set. The 62 items above are all of the remaining parcel clusters.

We then compared our resulting list to a list of playgrounds and playfields from the Park Department. Excluding school-based properties, we found we had all the items already on our Planning Department list. However, the Park Department list included only 20 properties. We then called the Planning Department and discussed the other items. Source classifications above denote as follows: "pk" (23) denotes properties identified by the Park Department as parks under their jurisdiction although not listed for public recreational events; "tr" (6) represents traffic triangles; "st" (4) represents state or federal parks; "no" (9) represents unknown to the Park Deparment staff under that name; "pd" (20) identifies property publicly listed for recreation by the Park Department.

Notes on Comparison to Police Reports:

1) Federal park corresponds to our "Armory National Historic Park".
2) Johnny Appleseed park appears to refer, in 6 cases, to Stebbins Park; in one more case, it appears to refer to Oakland Street Park.
3) Note that Apremont traffic triangle was listed as a park, but the case file bore the notation "not a park" and we have omitted that property.

Springfield Non-Statutory Facilities Listed In Police Reports

Name	Address	Nearest incident (ft.)	Cited alone (1)	Needed (2)	Needed and within 1200 feet (3)	Cited and Needed and within 1200 feet (4)	Note
Armory Square Day Care (STCC)	Campus of STCC near corner of Pearl and Federal	618	5	5	5	5	
Children's Corner Daycare -	242 Walnut Street	577	1	3	3	1	
Community Music School	127 State Street	614	1	0	0	0	
Greenwich St Day Care	68-70 Calhoun Street	270	7	5	5	5	
Liberty Hill Head Start	5 Nursery Street (part of housing project 5-63)	478	1	0	0	0	Uncertain whether accredited
Mini and Wynnies Day Care	17 John St (Church)	1201	3	4	0	0	
Rhodlyn Thomas Day Care	87 Leyfred Terrace	537	1	2	1	1	
S. Action Comm. Head Start	721 State Street	235	2	0	0	0	Uncertain whether accredited
S. Infant and Toddler	17 Winter Street	760	1	1	1	1	
Springfield Day Nursery	155 Chestnut Street Office	259	0	9	9	0	
The Day Care	62 Noel Street	698	1	0	0	0	
The Kids Place Childcare	594 Cottage Street	2244	1	1	0	0	
Average Distance and Counts of Cases		708	24	30	24	13	

(1) Number of cases in which a police report cites the institution alone as the near school constituting the violation.
(2) Number of cases in which no true park or school within range and the institution is the closest. This group may exceed the citations because it is generated by direct computation, not from the reports.
(3) Number of cases where needed and within 1200 feet of the incident. We used 1200 feet here because we used points, as opposed to polygons, to represent these schools, which are often portions of other properties and were hard to place. We did not want to underestimate the helpfulness of these citations.
(4) Number of cases included in both (3) and (1).